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PHILOSOPHICAL  
TRANSACTIONS

OF THE  
ROYAL SOCIETY  
OF  
LONDON.

FOR THE YEAR MDCCCXXX.

PART I.

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LONDON:

PRINTED BY RICHARD TAYLOR, RED LION COURT, FLEET STREET.

MDCCCXXX.

## A D V E R T I S E M E N T.

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THE Committee appointed by the *Royal Society* to direct the publication of the *Philosophical Transactions*, take this opportunity to acquaint the Public, that it fully appears, as well from the council-books and journals of the Society, as from repeated declarations which have been made in several former *Transactions*, that the printing of them was always, from time to time, the single act of the respective Secretaries, till the Forty-seventh Volume: the Society, as a Body, never interesting themselves any further in their publication, than by occasionally recommending the revival of them to some of their Secretaries, when, from the particular circumstances of their affairs, the *Transactions* had happened for any length of time to be intermittent. And this seems principally to have been done with a view to satisfy the Public, that their usual meetings were then continued, for the improvement of knowledge, and benefit of mankind, the great ends of their first institution by the Royal Charters, and which they have ever since steadily pursued.

But the Society being of late years greatly enlarged, and their communications more numerous, it was thought advisable that a Committee of their members should be appointed, to reconsider the papers read before them, and select out of them such as they should judge most proper for publication in the future *Transactions*; which was accordingly done upon the 26th of March 1752. And the grounds of their choice are, and will continue to be, the importance and singularity of the subjects, or the advantageous manner of treating them; without pretending to answer for the certainty of the facts, or propriety of the reasonings, contained in the several papers so published, which must still rest on the credit or judgment of their respective authors.

It is likewise necessary on this occasion to remark, that it is an established rule of the Society, to which they will always adhere, never to give their opinion,

as a Body, upon any subject, either of Nature or Art, that comes before them. And therefore the thanks, which are frequently proposed from the Chair, to be given to the authors of such papers as are read at their accustomed meetings, or to the persons through whose hands they received them, are to be considered in no other light than as a matter of civility, in return for the respect shown to the Society by those communications. The like also is to be said with regard to the several projects, inventions, and curiosities of various kinds, which are often exhibited to the Society ; the authors whereof, or those who exhibit them, frequently take the liberty to report and even to certify in the public newspapers, that they have met with the highest applause and approbation. And therefore it is hoped that no regard will hereafter be paid to such reports and public notices ; which in some instances have been too lightly credited, to the dishonour of the Society.

## CONTENTS.

---

I. THE BAKERIAN LECTURE.—*On the manufacture of Glass for optical purposes.*  
*By MICHAEL FARADAY, Esq. F.R.S. &c.* . . . . . page 1

II. *Account of Levellings carried across the Isthmus of Panamá, to ascertain the relative height of the Pacific Ocean at Panamá, and of the Atlantic at the mouth of the river Chagres; accompanied by Geographical and Topographical Notices of the Isthmus.* *By JOHN AUGUSTUS LLOYD, Esq.*  
*Communicated by Captain SABINE, Secretary of the Royal Society.* . . 59

III. *On the law of the partial polarization of light by reflexion.* *By DAVID BREWSTER, LL.D. F.R.S. L. & E.* . . . . . 69

IV. *A Report on the stomach of the Zariffa.* *By Sir EVERARD HOME, Bart., Vice-President of the Royal Society.* . . . . . 85

V. *On the production of regular double refraction in the molecules of bodies by simple pressure; with observations on the origin of the doubly refracting structure.* *By DAVID BREWSTER, LL.D. F.R.S. L. & E.* . . 87

VI. *Experiments on the influence of the Aurora Borealis on the magnetic needle.*  
*By the Reverend JAMES FARQUHARSON, F.R.S. Minister of Alford, Aberdeenshire. In letters addressed to Captain EDWARD SABINE, Secretary of the Royal Society.* . . . . . 97

VII. *Remarks on several icebergs which have been met with in unusually low latitudes in the southern hemisphere.* *By Captain JAMES HORSBURGH, Hydrographer to the East India Company, F.R.S.* . . . . . 117

VIII. *On the progressive improvements made in the efficiency of steam engines in Cornwall; with investigations of the methods best adapted for imparting great angular velocities.* *By DAVIES GILBERT, Esq. President.* . . 121

## APPENDIX

*Meteorological Journal kept at the Apartments of the Royal Society, by order of  
the President and Council.*

The PRESIDENT and COUNCIL of the ROYAL SOCIETY adjudged the  
ROYAL MEDALS for the year 1829 as follows :

A Royal Medal to CHARLES BELL, Esq. Fellow of the Royal Society, for his Discoveries relating to the Nervous System.

A Royal Medal to Professor EILERT MITSCHERLICH of Berlin, Foreign Member of the Royal Society, for his Discoveries relating to the Laws of Crystallization, and the Properties of Crystals.

PHILOSOPHICAL  
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MDCCCXXX.

## A D V E R T I S E M E N T.

SINCE the appearance of the Papers relating to the Paramatta Observations, which were published at the request and at the expense of the Colonial Office, and appended to the Philosophical Transactions, it has appeared that some of the Observations communicated by Mr. RUMKER were made by that gentleman while he was the paid assistant of Sir THOMAS BRISBANE, at an Observatory founded by Sir THOMAS BRISBANE, and with his instruments; and that some others were actually made by Sir THOMAS BRISBANE himself.

## CONTENTS.

---

XVII. *Memoir on the occurrence of Iodine and Bromine in certain Mineral Waters of South Britain. By CHARLES DAUBENY, M.D. F.R.S. Professor of Chemistry in the University of Oxford.* . . . . . page 223

XVIII. *Experiments to determine the difference in the Number of Vibrations made by an Invariable Pendulum in the Royal Observatories of Greenwich and Altona. By Captain EDWARD SABINE of the Royal Artillery, Secretary to the Royal Society.* . . . . . 239

XIX. *Experiments to ascertain the Correction for Variations of Temperature, within the limits of the natural temperature of the Climate of the South of England, of the Invariable Pendulum recently employed by British Observers. By Captain EDWARD SABINE of the Royal Artillery, Secretary to the Royal Society* . . . . . 251

XX. *On a new Register-Pyrometer, for measuring the Expansions of Solids, and determining the higher Degrees of Temperature upon the common thermometric scale. By J. FREDERIC DANIELL, Esq. F.R.S.* . . . . . 257

XXI. *On the Phenomena and Laws of Elliptic Polarization, as exhibited in the Action of Metals upon Light. By DAVID BREWSTER, LL.D. F.R.S. Lond. & Edin.* . . . . . 287

XXII. *Researches in Physical Astronomy. By JOHN WILLIAM LUBBOCK, Esq. Fellow of the Royal Society.* . . . . . 327

XXIII. *On the Error in Standards of Linear Measure, arising from the thickness of the bar on which they are traced. By Captain HENRY KATER, V.P. and Treasurer of the Royal Society.* . . . . . 359

XXIV. <i>On the Illumination of Light-houses. By Lieut. THOMAS DRUMMOND of the Royal Engineers. Communicated by Lieut. Colonel COLBY of the Royal Engineers, F.R.S.</i> . . . . .	page 383
XXV. <i>On the electro-magnetic properties of metalliferous veins in the mines of Cornwall. By ROBERT WERE FOX. Communicated by the President.</i> 399	
XXVI. <i>Sequel to a paper on the tendency to Calculous Diseases, and on the Concretions to which such diseases give rise. By JOHN YELLOLY, M.D. F.R.S.</i> . . . . .	415
<i>Index</i> . . . . .	429

#### APPENDIX.

*Presents received by the Royal Society, from Nov. 19th 1829 to June 17th 1830.*

*Meteorological Journal, kept at the Apartments of the Royal Society, by order of the President and Council.*

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#### ERRATA in Part I.

Page 74, *delete* the last paragraph but one.

— 142, in the second formula, line 4th, *for*  $\phi$ , *read* 1.

#### Part II.

Page 260, last line, *for* fire *read* ice.

— 282, line 8, *for* heated *read* luted.

A List of Public Institutions and Individuals, entitled to receive a copy of the Philosophical Transactions of each year, on making application for the same directly or through their respective agents, within five years of the date of publication.

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The Society for the Encouragement of Arts.  
The Astronomical Society of London.  
The Cambridge University Philosophical Society.  
The Royal Artillery Library at Woolwich.  
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The Horticultural Society of London.  
The Linnean Society of London.  
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The Dublin Society.  
The University of Edinburgh.  
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The University of St. Andrews.  
The University of Aberdeen.  
The University of Glasgow.  
The Asiatic Society at Calcutta.  
The Royal Asiatic Society.  
The Observatory at Paramatta.

*Denmark.*

The Royal Society of Sciences at Copenhagen.  
The Royal Observatory at Altona.

*France.*

The Royal Academy of Sciences at Paris.  
The Royal Academy of Sciences at Thoulouse.

The "Ecole des Mines" at Paris.

The Geographical Society at Paris.

*Germany.*

The University at Göttingen.  
The Cæsarean Academy of Naturalists at Bonn.

*Italy.*

The Italian Society of Sciences at Modena.  
The Royal Academy of Sciences at Turin.

*The Netherlands.*

The Imperial Academy of Sciences at Brussels.

*Spain.*

The Royal Observatory at Cadiz.

*Portugal.*

The Royal Academy of Sciences at Lisbon.

*Prussia.*

The Royal Academy of Sciences at Berlin.

*Russia.*

The Imperial Academy of Sciences at St. Petersburg.

*Sweden.*

The Royal Academy of Sciences at Stockholm.

*United States.*

The American Philosophical Society at Philadelphia.

The New York Philosophical Society.

The Boston Philosophical Society.

The Library of Harvard College.

The fifty Foreign Members of the Royal Society.

A List of Public Institutions and Individuals entitled to receive a copy of the Astronomical Observations made at the Royal Observatory at Greenwich, upon application for the same directly or through their respective Agents.

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The Bodleian and Savilian Libraries, Oxford.  
The Library of Trinity College, Cambridge.  
The King's Observatory at Richmond.  
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The Observatory at Cambridge.  
The Observatory at the Cape of Good Hope.  
The Observatory at Dublin.  
The Observatory at Oxford.  
The Observatory at Madras.  
The Observatory at Paramatta.  
The Observatory at Berlin.  
The Observatory at Manheim.  
The University of Aberdeen.  
The University of St. Andrews.  
The University of Dublin.  
The University of Edinburgh.  
The University of Glasgow.  
The Astronomical Society.  
The Royal Institution.  
The President of the Royal Society.  
The Lowndes' and Plumian Professors of Astronomy, Cambridge.  
The Lord Bishop of Cloyne.  
Francis Baily, Esq.  
Thomas Henderson, Esq.  
Captain W. H. Smyth, R.N.  
Sir James South.  
Edward Troughton, Esq.

*In Foreign Countries.*

The Royal Academy of Sciences at Berlin.  
The Royal Academy of Sciences at Paris.  
The Imperial Academy of Sciences at St. Petersburg.  
The Royal Academy of Sciences at Stockholm.  
The Royal Academy of Sciences at Upsal.  
The Board of Longitude at Paris.  
The University of Göttingen.  
The University of Leyden.  
The Academy of Bologna.  
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The Observatory at Altona.  
The Observatory at Brussels.  
The Observatory at Cadiz.  
The Observatory at Coimbra.  
The Observatory at Copenhagen.  
The Observatory at Dorpat.  
The Observatory at Königsberg.  
The Observatory at Marseilles.  
The Observatory at Milan.  
The Observatory at Paris.  
The Observatory at Seeberg.  
The Observatory at Vienna.  
The Observatory at Wilna.  
Professor Bessel.  
Dr. William Olbers.